

A Software Tool for Coding and Transmitting Health Outcomes Data

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The rapid rate of growth in the collection and pooling of health outcomes data has prompted the need for standardization. The work of health care organizations and consortiums pooling data would be greatly facilitated by widely accepted standards for the coding and transmitting of outcomes data. Moreover, standards allow for the inter-operation of data capture products, data analysis tools, and data pooling services developed by a variety of different vendors.

The Health Outcomes Institute (HOI) and the Henry Ford Health System (HFHS) have developed and maintain a database of health outcomes questions which provides a mechanism for uniquely coding data elements. HFHS and the American Medical Group Association (AMGA) have created a software tool to facilitate the conversion and transmission of health outcomes data elements in an American Society for Testing and Materials (ASTM)/Health Level Seven (HL7) format, which incorporates HOI question standards.

Rather than invent a new scheme for outcomes data transmission, we applied the ASTM-E-1238-94/HL7 standard for use with health outcomes data. In general terms, this standard architecture provides a mechanism of sending a linear stream of data which can represent the following set of container relationships: A *message* contains data for one or more *patients*. A patient contains one or more *observation orders*. An observation order contains zero or more *observations* (results). The standard provides field definitions for four "segments" corresponding to these container levels: message header (H); patient (P); observation order (OBR); and observation result (OBX).

These coding standards have been incorporated into the ASTM-E-1238-94 data coding and transmission standard approved by the ASTM [1]. The HOI® Health Outcomes Question Database is the only recommended coding system for outcomes data listed

in the ASTM-E-1238-94. The ASTM assigned the code "HI" to identify data coded using HOI outcomes data element codes.

The data conversion software consists of two main components, both of which are Microsoft Windows-based. The Outcomes Data Conversion Utility (ODCU) is used by those collecting outcomes data to convert their data from ASCII or DBF format into the standard format. The ODCU includes a question search utility permitting users to search the HOI® Question Database for specific questions by subject, keywords, or identifier. It permits users to define the layout of their input file and map each input field to HOI questions and elements. The software is user-friendly due to the use of the graphical user interface (GUI) and the "wizard" or dialog-style function approach.

The Standard Outcomes Data Import Utility (SODIU) is used by sites which receive the transmitted ASTM-E-1238-94/HL7 standard data for incorporation into the pooled database. The SODIU allows the user to take the ASTM-E-1238-94/HL7 formatted file and convert it into a DBF file. Data integrity is verified using an error checking mechanism. Incoming data may be merged with current databases or stored in stand-alone files.

The ODCU and SODIU products were made commercially available for the first time at the July 1996 AMGA Outcomes Measurement Consortium meeting. At this meeting, the AMGA endorsed this product and recommended it for use by its members. The AMGA leadership anticipates this product will greatly reduce the burden of pooling health outcomes data from their more than 50 member organizations.

Reference

- [1] ASTM. Annual Book of ASTM Standards. Standard Specification for Transferring Clinical Observations Between Independent Computer Systems E-1238. Philadelphia: ASTM; 1993.